on a front side of each panel on opposite sides of the hinge of a two panel mobile communications terminal. In addition, the back side of each panels is also used for providing a secondary display and secondary keyboard or keypad. The hinge allows a full 360° relative movement between the two panels. Functional components are enclosed within the panels for providing mobile communications, digital camera, notepad features, PDA functions, clock radio and Internet access. These features are enabled by a microprocessor when the relative positions of the panels are at 360°, 300°, 180°, and 165°. The primary and secondary display screens are capable of providing a display associated with some or all of the features, for example data display for mobile communications, clock radio, and Internet, touch sensitive display for notepad and view finder display for digital camera. The keyboard and keypad are capable of entering data associated with some or all of the features.

[0016] In accordance with another aspect of this invention, the microprocessor controller receives signals from sensors indicating the relative positions of the panels and the controller enables selected features in response to these positions. Individual features are selected by the user by operation of function buttons mounted on the panels.

[0017] In accordance with another aspect of this invention a primary display screen is mounted on a front surface of the first panel of a two panel multi-function device and is adapted to display data relating to the functions, such as, for example, mobile communications, personal data assistant (PDA), notepad, clock radio, Internet, and other data displays depending on the operational selection of the user and the relative position of the panels. A primary keyboard is provided on the front surface of the second panel located on the opposite side of the hinge. The primary keyboard provides a means of inputting data for use in telephone functions, PDA functions, and other functions as necessary. Appropriate function buttons are also provided on one or both of the first and second panels to facilitate browsing and selection of menu items displayed on the display screen. A secondary display screen is mounted on the back surface of the second panel. A secondary keypad and grouping of function buttons are provided on the back side of the second panel. A camera is mounted on the back surface of the first panel for operative use with either the primary or secondary displays.

[0018] In accordance with another aspect of the invention a camera lens is mounted for use on the back surface of the first panel and may be used either in the closed, 0°, position in association with the secondary display panel or in an open position, such as in the range of 90° to 180° in association with the primary display panel. Camera usage is optimized in the 0° position.

[0019] In accordance with another aspect of the invention a free standing mode is provided at approximately 270°-300° which allows the device to be placed with the primary screen exposed in an easily viewable position and the second panel providing a base to allow the device to be supported upright without the need for holding the device. In this free-standing position, the use of the alarm clock and radio function is most convenient. In addition a photo may be displayed for continuing observation in the nature of a picture frame.

[0020] In accordance with another aspect of the invention, the device may also be extended flat for table use in the 180° orientation of the panels with the front surfaces of the first and second panels exposed for use and viewing. In this position, the PDA function is most accessible, but all features can also be used. The cellular phone is particularly well adapted for hands free operation in this position. In addition, the function mode in which Internet access is allowed would also be selectable in the 180° position.

[0021] In accordance with another aspect of the invention, the functioning of the device is controlled by a microprocessor which monitors the relative position of the first and second panels to identify accessible function and assign functions to the components of the user interface. Certain of the keys provided will be soft keys in that their function will depend on the relative position of the first and second panels and the function selected. In addition, the display driver is designed to switch the display to the viewable display screen in response to movement and position of the panels. The orientation and position of the display on the display screen may also be changed to accommodate the user in the most convenient manner consistent with the function selected. Different menus and data may be displayed depending on the position of the panels and the selected use.

[0022] The operable positions of the panels can be expanded or altered for adaptation to alternative or additional modes of operation.

[0023] In another aspect of the invention, the hinge used in the device of this application comprises a first hinge member defining a first axis of rotation with the first panel, a second hinge member defining an offset second axis of rotation with the second panel, and synchronizing members which transfer rotational movement of the first panel relative to the hinge to rotational movement of the second panel relative to the hinge. Due to the synchronized movements of the first and second panels, the two panels will fold and unfold smoothly without the risk of jamming the hinge, i.e. the case where one panel unfolds in relation to the hinge while the second panel remains immovable relative to the hinge. Hinges of this type are described in the commonly owned pending patent applications referenced above.

[0024] In accordance with one aspect of the invention, a primary display screen and keyboard/display are arranged on opposite sides of the hinge of a two panel mobile communications terminal. The keyboard is in the form of a touch screen display that allows both touch sensitive entering of data and display of images in separate modes of operation. The hinge allows a full 360° relative movement between the two panels, resulting in the exposure of the touch screen display and the display screen on opposite sides of the device. Functional components are enclosed within the panels for providing mobile communications, digital camera, and notepad features. In particular the camera features are enabled by a microprocessor when the relative positions of the panels are at 360°. The camera lens is constructed on the same panel face as the touch sensitive screen. The primary display screen is capable of providing a display associated with several of the features, for example data display for mobile communications, and view finder display for digital camera.

[0025] In another aspect of this invention, the touch screen display is configured to operate also as a viewfinder display. In this configuration the camera lens may still be located on the same panel face as the touch sensitive screen in order to facilitate a video call.